CLAIMS

1. A process for the production of L-epi-2-inosose, characterized in that the process comprises reacting a microorganism capable of converting myo-inositol into L-epi-2-inosose, and thereby converting myo-inositol into L-epi-2-inosose to produce L-epi-2-inosose.

2. A process as claimed in Claim 1, wherein the microorganism which is used and is capable of converting myo-inositol into L-epi-2-inosose is a bacterium.

3. A process as claimed in Claim 1, wherein the microorganism which is used and is capable of converting myo-inositol into L-epi-2-inosose is a gram-negative bacterium.

4. A process as claimed in Claim 1, wherein the microorganism which is used and is capable of converting myo-inositol into L-epi-2-inosose is a gram-negative bacterium which is selected from bacteria of the genus Xanthomonas or Pseudomonas belonging to the family Pseudomonaceae; or bacteria of the genus Acetobacter or Gluconobacter belonging to the family Acetobacteraceae; or bacteria of the genus Agrobacterium belonging to the family Rhizobiaceae; or bacteria of the genus Erwinia, Enterobacter, Serratia or Yersinia belonging to the family Enthrobacteriacea; or bacteria of the genus Pasteurella or Haemophilus belonging to the family Pasteurellaceae.

5. A process as claimed in Claim 1, wherein, as the microorganism capable of converting myo-inositol into L-

epi-2-inosose, there is used Xanthomonas sp. AB 10119 strain (deposited under FERM BP-7168) or Pseudomonas sp. AB 10215 strain (deposited under FERM BP-7170) or Erwinia sp. 10135 strain (deposited under FERM BP-7169).

6. A process as claimed in Claim 1, wherein the microorganism capable of converting myo-inositol into L-epi-2-inosose is cultivated under aerobic conditions in a liquid culture medium containing an amount of myo-inositol, carbon sources and nitrogen sources, whereby the myo-inositol is reacted with said microorganism in the culture medium to produce and accumulate L-epi-2-inosose in the resulting culture broth.

7. A process as claimed in Claim 1, which comprises the steps of cultivating the microorganism capable of converting myo-inositol into L-epi-2-inosose in a culture medium, separating the microbial cells of the cultivated microorganism from the resulting culture broth, adding the so separated microbial cells to a buffer solution or a liquid culture medium containing an amount of myo-inositol dissolved therein, and reacting the so added microbial cells with myo-inositol in said buffer solution or said liquid culture medium to convert myo-inositol and to produce L-epi-2-inosose in the resulting reaction solution or the resulting culture broth.

8. A process as claimed in Claim 1, wherein the culture broth or the reaction solution containing the microbial cells and L-epi-2-inosose as produced and accumulated

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therein is obtained in the process of Claim 6 or 7, followed by removing the microbial cells of the micro-organism from said culture broth or said reaction solution, and wherein the resulting culture broth supernatant or the resulting filtrate of the reaction solution as obtained upon the removal of the microbial cells from said culture broth or said reaction solution containing L-epi-2-inosose therein is then subjected to a treatment with ion-exchange resin(s) or to a treatment with activated carbon or to a treatment for crystallization of L-epi-2-inosose or to any combination of these treatments, whereby L-epi-2-inosose of a high purity is recovered from said culture broth supernatant or said filtrate of the reaction solution.

9. A process for the production of epi-inositol, characterized in that the process comprises the steps of reacting a microorganism capable of converting myo-inositol into L-epi-2-inosose, with myo-inositol in an aqueous reaction medium to produce L-epi-2-inosose in said aqueous reaction medium, thereby affording the resulting reaction solution containing the microbial cells of said microorganism and the produced L-epi-2-inosose therein, removing the microbial cells from said reaction solution to give a reaction solution filtrate containing L-epi-2-inosose, adding an appropriate reducing agent directly to said reaction solution filtrate containing L-epi-2-inosose, and reacting the reducing agent with L-epe-2-inosose to produce epi-inositol and myo-inositol.

10. A process as claimed in Claim 9, wherein the microorganism which is used and is capable of converting myo-inositol into L-epi-2-inosose is a bacterium.

11. A process as claimed in Claim 9, wherein the microorganism which is used and is capable of converting myo-inositol into L-epi-2-inosose is a gram-negative bacterium.

12. A process as claimed in Claim 9, wherein the microorganism which is used and is capable of converting myo-inositol into L-epi-2-inosose is a gram-negative bacterium which is selected from bacteria of the genus Xanthomonas or Pseudomonas belonging to the family Pseudomonaceae, or bacteria of the genus Acetobacter or Gluconobacter belonging to the family Acetobacteraceae, or bacteria of the genus Agrobacterium belonging to the family Rhizobiaceae, or bacteria of the genus Erwinia, Enterobacter, Serratia or Yersinia belonging to the family Enterobacteriacea, or bacteria of the genus Pasteurella or Haemophilus belonging to the family Pasteurellaceae.

13. A process as claimed in Claim 9, wherein, as the microorganism capable of converting myo-inositol into L-epi-2-inosose, there is used Xanthomonas sp. AB 10119 strain (deposited under FERM BP-7168) or Pseudomonas sp. AB 10215 strain (deposited under FERM BP-7170) or Erwinia sp. 10135 strain (deposited under FERM BP-7169).

14. A process as claimed in Claim 9, which comprises the steps of cultivating under aerobic conditions a microorganism capable of converting myo-inositol into L-epi-2-

inosose in such an aqueous reaction medium composed of a liquid culture medium containing an amount of myo-inositol, carbon sources and nitrogen sources, so as to react myo-inositol with said microorganism in said aqueous reaction medium, and thereby producing and accumulating L-epi-2-inosose in the resulting culture broth to afford this culture broth which is namely the resulting reaction solution containing the microbial cells of said microorganism and L-epi-2-inosose therein; as well as the step of removing the microbial cells of said microorganism from the resulting reaction solution, namely the afforded culture broth, to produce a culture broth supernatant which is namely the filtrate of said reaction solution containing L-epi-2-inosose; and the steps of then adding directly to said culture broth supernatant an alkali metal boron hydride, an alkali metal tri-alkoxyboron hydride or an alkali metal boron cyanide as the reducing agent, and effecting the reductive reaction of L-epi-2-inosose with this reducing agent, thereby to produce epi-inositol and myo-inositol in said culture broth supernatant, namely said reaction solution filtrate; the step of recovering the epi-inositol and myo-inositol from the resultant reaction solution of the reductive reaction, which is namely the culture broth supernatant containing the epi-inositol and myo-inositol so produced; and the step of separating the recovered epi-inositol and myo-inositol from each other.

15. A process as claimed in Claim 9, which comprises the

steps of cultivating under aerobic conditions a microorganism capable of converting myo-inositol into L-epi-2-inosose, in a liquid culture medium containing carbon sources and nitrogen sources, thereby to afford a culture broth of said microorganism, and then separating the microbial cells of said microorganism from the resultant culture broth; the step of reacting the so separated microbial cells of said microorganism with myo-inositol in an aqueous reaction medium composed of an aqueous buffer solution or a liquid culture medium, to produce L-epi-2-inosose in said aqueous reaction medium; the step of removing the microbial cells of said microorganism from the resulting aqueous reaction solution containing the microbial cells and the so produced L-epi-2-inosose therein, to afford a resulting filtrate of the reaction solution from which the microbial cells have been removed but in which L-epi-2-inosose remains dissolved; the steps of adding to the reaction solution filtrate an alkali metal boron hydride, an alkali metal tri-alkoxyboron hydride or an alkali metal boron cyanide as a reducing agent, and effecting the reductive reaction of L-epi-2-inosose with said reducing agent, thereby to produce epi-inositol and myo-inositol in said reaction solution filtrate; the step of recovering the epi-inositol and myo-inositol from the resulting reaction solution of the reductive reaction which is containing the epi-inositol and myo-inositol so produced; and the step of separating the so recovered epi-

inositol and myo-inositol from each other.

16. A process as claimed in Claim 14 or Claim 15, wherein, before conducting the step of effecting the reductive reaction of L-epi-2-inosose with the reducing agent as added, there is conducted such a preliminary step in which the pH of the aqueous medium composed of the culture broth supernatant or the reaction solution filtrate containing L-epi-2-inosose therein is once adjusted to an alkaline pH in a range of pH 8 to 12; and wherein there is then conducted the step which comprises adding to said aqueous medium containing L-epi-2-inosose and having a pH of 8 to 12 an alkali metal boron hydride, an alkali metal tri-alkoxyboron hydride or an alkali metal boron cyanide as the reducing agent, and the effecting the reductive reaction of L-epi-2-inosose with said reducing agent, whereby the desired epi-inositol is produced in a yield much greater than that of the by-produced myo-inositol.

17. A process as claimed in Claim 9, wherein the reducing agent to be used for the reductive reaction of L-epi-2-inosose is chosen from sodium boron hydride, lithium boron hydride, potassium boron hydride, sodium tri-methoxyboron hydride and sodium boron cyanide hydride.

18. A process as claimed in Claim 9, wherein the aqueous reaction medium to be used is water, and the reducing agent to be used is sodium boron hydride.

19. As a new microorganism, Xanthomonas sp. AB 10119 strain which has a characteristic nature capable of

converting myo-inositol into L-epi-2-inosose and which has been deposited under the deposit number of FERM BP-7168 in the National Institute of Bioscience and Human Technology, Agency of Industrial Science and Technology, in Japan.

20. As a new microorganism, Pseudomonas sp. AB 10215 strain which has a characteristic nature capable of converting myo-inositol into L-epi-2-inosose and which has been deposited under the deposit number of FERM BP-7170 in the National Institute of Bioscience and Human Technology, Agency of Industrial Science and Technology, in Japan.

21. As a new microorganism, Erwinia sp. AB 10135 strain which has a characteristic nature capable of converting myo-inositol into L-epi-2-inosose and which has been deposited under the deposit number of FERM BP-7169 in the National Institute of Bioscience and Human Technology, Agency of Industrial Science and Technology, in Japan.

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